

REMARKS

In view of the above amendments and the following remarks, reconsideration and further examination are respectfully requested.

I. Amendments to the Drawings

As mentioned above, proposed drawing amendments are submitted herewith under a separate cover letter. Specifically, figures 20 and 21 have been amended to be identified as prior art, as requested in item 4 on pages 3 and 4 of the Office Action. As a result, withdrawal of the objections to the drawings is respectfully requested.

These drawing amendments are editorial in nature and do not add new matter to the application.

II. Amendments to the Specification and Abstract

The specification and abstract have been reviewed and revised to improve their English grammar as well as address the informalities identified in item 5 on page 4 of the Office Action. Specifically, as requested in the objection in item 5, the specification has been amended to replace “cylinder 32” with “cylinder 43” and to replace “width lx” with “width l.” Therefore, withdrawal of this objection is respectfully requested. No new matter has been added.

III. Title of the Invention

In accordance with Examiner's request in item 6 on page 4 of the Office Action, the title of the invention has been amended. The invention is now titled "INSTALLATION STRUCTURE OF PILOT NOZZLE OF COMBUSTOR."

IV. Amendments to the Claims

In view of the election of claims 16 and 17, claims 1-15 and 18-57 have been identified as being withdrawn.

Claims 16 and 17 have been amended to clarify features of the invention recited therein and to further distinguish the present invention from the reference relied upon in the rejections discussed below. These amendments are supported by, at least, Fig. 11 and pages 28-31 of the specification. Therefore, no new matter has been added.

It is also noted that claims 16 and 17 have been amended to make a number of editorial revisions thereto. These editorial revisions have been made to place the claims in better U.S. form. Further, these editorial revisions have not been made to narrow the scope of protection of the claims, or to address issues related to patentability, and therefore, these amendments should not be construed as limiting the scope of equivalents of the claimed features offered by the Doctrine of Equivalents.

V. 35 U.S.C. § 112, First Paragraph Rejection

Claims 16 and 17 were rejected under 35 U.S.C. § 112, first paragraph for failing to comply with the written description requirement. Specifically, claims 16 and 17 were rejected for reciting the term “cone” when the angle θ is 0° , because a cone cannot exist when the angle θ is 0° . This rejection is believed inapplicable to amended claims 16 and 17 for the following reasons.

Claim 16 has been amended to clarify that $0 < \theta < 2\alpha x$, which requires the angle θ to be greater than 0° . As a result, since the angle θ is greater than 0° , then a cone will always be present. The specification has also been amended accordingly. For this reason, the written description requirement is now satisfied. Therefore, withdrawal of this rejection is respectfully requested.

VI. 35 U.S.C. § 112, Second Paragraph Rejections

Claims 16 and 17 were rejected under 35 U.S.C. § 112, second paragraph for being indefinite for various reasons. These rejections are believed clearly inapplicable to claims 16 and 17, since claims 16 and 17 have been amended to avoid the problems identified by the Examiner and to otherwise comply with the requirements of 35 U.S.C. § 112, second paragraph. As a result, withdrawal of these rejections is respectfully requested.

VII. 35 U.S.C. § 102 Rejection

Claims 16 and 17 were rejected under 35 U.S.C. § 102(b) as being anticipated by Iwai (U.S. 6,070,411). This rejection is believed clearly inapplicable to amended independent claim 16 and claim 17 that depends therefrom for the following reasons.

Amended independent claim 16 recites a combustor including a pilot nozzle, main nozzles surrounding the pilot nozzle, a pilot cone covering a downstream tip portion of the pilot nozzle, and main burners covering downstream tip portions of the main nozzles. In addition, claim 16 recites that the pilot cone includes a cone having a tapered portion located at an inner circumference thereof, such that (1) the tapered portion of the cone forms a tapered shape stretching outwardly in a radial pattern toward a downstream side of the combustor. Moreover, claim 1 recites that the pilot cone includes (2) a collar portion located on a downstream side of downstream-side tips of the main burners that cover downstream tip portions of the main nozzles. Finally, claim 1 recites that (3) an opening angle measured at the tapered portion of the inner circumference of the cone is specified as “ θ ,” wherein “ $0 < \theta < 2\alpha_x$.” Iwai fails to disclose or suggest above-mentioned distinguishing features (1)-(3), as recited in claim 1.

Rather, Iwai teaches (referring to letters A, E, F, and G assigned by the Examiner) that a pilot cone of a combustor includes a tapered portion A, a collar E, an outer circumference F and an outer wall G, such that (i) the tapered portion A narrows inwardly toward an axial direction of the combustor, and (ii) the collar E does not extend beyond main burners that extend beyond main nozzles 37 (see Fig. 2 and pages 6 and 7 of the Office Action).

Thus, in view of the above, it is clear that Iwai teaches that the tapered portion A narrows

inwardly toward an axial direction of the combustor, but fails to disclose or suggest that the tapered portion of the cone forms a tapered shape stretching outwardly in a radial pattern toward a downstream side of the combustor, as required by claim 1.

In addition, it is evident that Iwai teaches that the collar E does not extend beyond main burners that extend beyond main nozzles, and thus fails to disclose or suggest that the collar portion is located on a downstream side of downstream-side tips of the main burners that cover downstream tip portions of the main nozzles, as recited in claim 1.

Furthermore, although Iwai teaches the use of a tapered portion, Iwai still fails to disclose or suggest that an opening angle measured at the tapered portion of the inner circumference of the cone is specified as “ θ ,” wherein “ $0 < \theta < 2\alpha_x$,” as required by claim 1.

Therefore, because of the above-mentioned distinctions it is believed clear that independent claim 16 and claim 17 that depends therefrom are not anticipated by Iwai.

The benefit of the structure required by claim 1 is that (i) a low-speed zone can be formed on the downstream side of the collar as a result of the collar being located on a downstream side of the main burner, and (ii) a pilot diffusion flame can be led to the low-speed zone as a result of the tapered portion of the pilot cone. In light of the above description of Iwai, it is clear that Iwai does not provide a low-speed zone formed on the downstream side of the collar, such that the pilot diffusion flame can be led to the low-speed zone, because Iwai fails to disclose or suggest that the tapered portion of the cone forms a tapered shape stretching outwardly in a radial pattern toward a downstream side of the combustor and that the collar portion is located on a downstream side of downstream-side tips of the main burners, as required by claim 1.

Furthermore, there is no disclosure or suggestion in Iwai or elsewhere in the prior art of

record which would have caused a person of ordinary skill in the art to modify Iwai to obtain the invention of independent claim 16. Accordingly, it is respectfully submitted that independent claim 16 and claim 17 that depends therefrom are clearly allowable over the prior art of record.

VIII. Conclusion

In view of the above amendments and remarks, it is submitted that the present application is now in condition for allowance and an early notification thereof is earnestly requested. The Examiner is invited to contact the undersigned by telephone to resolve any remaining issues.

The Commissioner is authorized to charge any deficiency or to credit any overpayment associated with this communication to Deposit Account No. 23-0975, with the EXCEPTION of deficiencies in fees for multiple dependent claims in new applications.

Respectfully submitted,

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2009.06.23 16:29:40 -04'00'

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June 23, 2009